IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for controlled radical homopolymerisation, in an aqueous solution, of acrylic acid and its salts, or of copolymerisation, in aqueous solution, of acrylic acid with one or more hydrosoluble monomers, wherein said process ~~characterised in that it~~ is in batch or semi-batch mode, and wherein said process ~~in that it~~ comprises two stages, the first of which is synthesizing ~~synthesis~~ "in situ" an ~~of the~~ hydrosoluble transfer agent used in the second stage of polymerisation.

Claim 2 (Currently Amended): The ~~A~~ process according to the claim 1, wherein ~~characterised in that~~ the reactive media ~~medium~~ of the first stage of synthesis of the transfer agent and of the second stage of polymerisation ~~is~~ are identical and solely water.

Claim 3 (Currently Amended): The ~~A~~ process according to claim 1, wherein said process ~~anyone of claims 1 or 2 characterised in that it~~ is a process of controlled radical homopolymerisation, in an aqueous solution, of acrylic acid, and ~~that it~~ is undertaken in batch mode.

Claim 4 (Currently Amended): The ~~A~~ process according to claim 1, wherein ~~one of the claims 1 to 3 characterised in that~~ the hydrosoluble transfer agent is an α-substitute β-carboxylate xanthate salt[[,]] ~~preferably an α-substitute β-carboxylate sodium xanthate and very preferably an α-methyl β-carboxylate sodium xanthate~~.

Claim 5 (Currently Amended): The ~~A~~ process according to claim 1, wherein, ~~one of the claims 1 to 4, characterised in that~~ in the second stage of polymerization, the limits of quantity of transfer agent are determined, such that the molar ratio of transfer agent to monomer is between 0.001% and 20%, and the mass ratio of transfer agent to monomer is between 0.01% and 60%.

Claim 6 (Currently Amended): The ~~A~~ process according to claim 1, wherein said process ~~one of the claims 1 to 5, characterised in that it~~ consists in putting in contact in the first stage:

- a potassium xanthate,
- 2-bromopropionic acid sodium salt,
- water,

and then in adding, in the ~~a~~ second stage, acrylic acid and at least one hydrosoluble initiator of free radicals.

Claim 7 (Currently Amended): The ~~A~~ process according to claim 1, wherein ~~one of the claims 1 to 6, characterised in that~~ the first stage is undertaken with equimolar quantities of potassium xanthate and the sodium salt of 2-bromopropionic acid.

Claim 8 (Currently Amended): The ~~A~~ process according to claim 1, wherein ~~one of the claims 1 to 2 and 4 to 7, characterised in that~~ the hydrosoluble copolymerised monomers are selected ~~chosen~~ from the group consisting of methacrylic acid, itaconic acid, maleic acid, 2-acrylamido-2-methyl-1-propane sulphonic acid in acid form or partially neutralised, 2-methacrylamido-2-methyl-1-propane sulphonic acid in acid form or partially neutralised, 3-methacrylamido-2-hydroxy-1-propane sulphonic acid in acid form or partially neutralised,

allylsulphonic acid, methallylsulphonic acid, allyloxybenzene sulphonic acid, methallyloxybenzene sulphonic acid, 2-hydroxy-3-(2-propenyloxy)propane sulphonic acid, 2-methyl-2-propene-1-sulphonic acid, ethylene sulphonic acid, propene sulphonic acid, 2-methyl sulphonic acid, styrene sulphonic acid, as well as all their salts, vinyl sulphonic acid, sodium methallylsulfonate, sulfopropyl acrylate or methacrylate, sulfomethylacrylamide, sulfomethylmethacrylamide, ~~or from among~~ acrylamide, methylacrylamide, n-methylolacrylamide, n-acryloylmorpholine, ethylene glycol methacrylate, ethylene glycol acrylate, propylene glycol methacrylate, propylene glycol acrylate, propene phosphonic acid, ethylene or propylene glycol acrylate or methacrylate phosphate, ~~or from among~~ vinylpyrrolidone, methacrylamido propyl trimethyl ammonium chloride or sulphate, trimethyl ammonium ethyl chloride or sulphate methacrylate, as well as their acrylate or acrylamide counterparts, whether quaternised or not, ~~and/or~~ ammonium dimethyldiallylchloride, and ~~as well as~~ mixtures thereof.

Claim 9 (Currently Amended): A hydrosoluble transfer agent used in the process according to claim 1, wherein said agent ~~one of the claims 1 to 8 characterised in that it~~ is obtained in the polymerisation reactive medium, namely water.

Claim 10 (Currently Amended): The ~~A~~ hydrosoluble transfer agent according to claim 9, wherein said agent ~~characterised in that it~~ is chosen from among the α-substitute β-carboxylate xanthate salts[[,]] ~~preferably from among the α-substitute β-carboxylate sodium xanthates, and very preferably in that it is an α-methyl β-carboxylate sodium xanthate~~.

Claim 11 (Currently Amended): A polymer of acrylic acid and of its salts, ~~characterised in that it is~~ obtained by the process according to claim 1 ~~anyone of the claims 1 to 8~~, and wherein said polymer ~~in that it~~ has an average molecular mass by weight (M_w) ~~of~~ between 1000 g/mole and 60,000 g/mole, measured by the GPC method, using as a standard, 5 standards of sodium polyacrylate, and wherein said polymer ~~in that it~~ has a polymolecularity index of less than, or equal to, 2, for a conversion rate, relative to acrylic acid, higher than 90%, determined according to an HPLC method.

Claim 12 (Currently Amended): The ~~A~~ polymer of acrylic acid and of its salts, according to claim 11, wherein said polymer ~~characterised in that it~~ has an average molecular mass by weight (M_w) ~~of~~ between 4500 g/mole and 8000 g/mole, measured by the GPC method, using as a standard, 5 standards of sodium polyacrylate, and wherein said polymer ~~in that it~~ has a polymolecularity index of less than, or equal to, 2, for a conversion rate, relative to acrylic acid, higher than 90%, determined according to an HPLC method.

Claim 13 (Currently Amended): The ~~A~~ polymer of acrylic acid and of its salts, according to claim 11, wherein said polymer ~~one of the claims 11 to 12 characterised in that it~~ is a homopolymer of acrylic acid.

Claim 14 (Currently Amended): The ~~A~~ polymer of acrylic acid and of its salts, according to claim 11, wherein said polymer comprises monomeric units derived from at least one ~~of the claims 11 to 12, characterised in that the~~ hydrosoluble copolymerised monomer ~~monomers~~ selected from the group consisting of ~~are chosen from~~ methacrylic acid, itaconic acid, maleic acid, 2-acrylamido-2-methyl-1-propane sulphonic acid in acid form or partially neutralised, 2-methacrylamido-2-methyl-1-propane sulphonic acid in acid form or

partially neutralised, 3-methacrylamido-2-hydroxy-1-propane sulphonic acid in acid form or partially neutralised, allylsulphonic acid, methallylsulphonic acid, allyloxybenzene sulphonic acid, methallyloxybenzene sulphonic acid, 2-hydroxy-3-(2-propenyloxy)propane sulphonic acid, 2-methyl-2-propene-1-sulphonic acid, ethylene sulphonic acid, propene sulphonic acid, 2-methyl sulphonic acid, styrene sulphonic acid, as well as all their salts, vinyl sulphonic acid, sodium methallylsulfonate, sulfopropyl acrylate or methacrylate, sulfomethylacrylamide, sulfomethylmethacrylamide, ~~or from among~~ acrylamide, methylacrylamide, n-methylolacrylamide, n-acryloylmorpholine, ethylene glycol methacrylate, ethylene glycol acrylate, propylene glycol methacrylate, propylene glycol acrylate, propene phosphonic acid, ethylene or propylene glycol acrylate or methacrylate phosphate, ~~or from among~~ vinylpyrrolidone, methacrylamido propyl trimethyl ammonium chloride or sulphate, trimethyl ammonium ethyl chloride or sulphate methacrylate, as well as their acrylate or acrylamide counterparts, whether quaternised or not, ~~and/or~~ ammonium dimethyldiallylchloride, and mixtures thereof.

Claim 15 (Currently Amended): The ~~A~~ polymer of acrylic acid and its salts, according to claim 11, wherein said polymer ~~any one of the claims 11 to 14, characterised in that it~~ is in its acid form, or ~~in that it~~ is totally or partially neutralised by one or more monovalent, divalent, trivalent neutralisation agents, ~~or~~ neutralisation agents of higher valency, or mixtures thereof.

Claim 16 (Currently Amended): The ~~A~~ polymer of acrylic acid and its salts, according to claim 15, wherein said polymer is ~~anyone of claims 11 to 15~~[[,]] partially or totally neutralised, and wherein ~~characterised in that~~ the monovalent agents are selected ~~chosen~~ from the group consisting of ~~constituted by~~ compounds containing alkaline cations,

~~particularly sodium and potassium, or lithium~~[[,]] and compounds containing ammonium, or ~~the~~ primary or secondary aliphatic and/or cyclic amines ~~such as ethanolamines, mono and diethylamine or cyclohexylamine~~, and wherein ~~characterised in that~~ the divalent, or trivalent neutralisation agents, or agents of higher valency, are selected ~~chosen~~ from the group consisting of ~~constituted by~~ compounds containing divalent cations belonging to the alkaline earths, ~~particularly magnesium and calcium, or zinc, and by~~ compounds containing trivalent cations, ~~including in particular aluminium~~[[,]] and ~~or by certain~~ compounds containing cations of higher valency.

Claim 17 (Currently Amended): The ~~A~~ polymer of acrylic acid and of its salts, according to claim 16, wherein said polymer ~~characterised in that it~~ is a homopolymer of acrylic acid, which is totally neutralised by soda, or totally neutralised by a soda-lime mixture in a 50/50 molar ratio, or partially neutralised by a soda-lime mixture in a 50/40 molar ratio.

Claim 18 (Currently Amended): A composition, comprising ~~Use of~~ the polymer according to claim 11, and one or more additives, ~~anyone of the claims 11 to 17~~ and wherein the composition is selected from the group consisting of a composition for ~~in the paper field and in particular in~~ paper coating and mass-filling of paper, a composition for oil, a composition for paint, a composition for water treatment, a composition for detergency, a composition for ceramics, a composition for cements and/or ~~or~~ hydraulic binders, a composition for public works, a composition for inks and/or ~~and~~ varnishes, a composition for sizing of textiles and/or ~~or~~ finishing of leather, ~~and more specifically as~~ and a composition for a dispersant and/or grinding aid agent of mineral materials ~~such as natural calcium carbonate, precipitated calcium carbonate, kaolin, titanium dioxide or clays~~.

Claim 19 (Currently Amended): An aqueous suspension, ~~of mineral fillers~~ comprising ~~characterised in that it contains~~ the polymer according to claim 11 and one or more mineral fillers, and wherein the polymer is present in an amount from ~~anyone of the claims 11 to 17 and more specifically in that it contains~~ 0.05% to 5%, by dry weight, ~~of the said polymer~~ relative to the total dry weight of the one or more mineral fillers.

Claim 20 (Currently Amended): The ~~An~~ aqueous suspension ~~of mineral fillers~~ according to claim 19, wherein ~~characterised in that~~ the one or more mineral fillers ~~filler~~ are selected from the group consisting of ~~is chosen from among~~ natural calcium carbonate ~~such as calcite, chalk or marble~~, synthetic calcium carbonate, ~~also called precipitated calcium carbonate~~[[,]] dolomites, magnesium hydroxide, kaolin, talc, gypsum, titanium oxide, and ~~or~~ aluminium hydroxide.

Claim 21 (Currently Amended): A manufactured and/or coated paper, comprising ~~characterised in that it contains~~ the aqueous suspension ~~of mineral fillers~~ according to claim 19, and one or more paper additives ~~anyone of claims 19 or 20~~.

Claim 22 (Currently Amended): A paint formulation, comprising ~~characterised in that it contains~~ the aqueous suspension ~~of mineral fillers~~ according to claim 19, and one or more paint additives ~~anyone of claims 19 or 20~~.

Claim 23 (New): A method of coating or filling paper, comprising, contacting a composition, comprising the polymer of claim 11, with a paper substrate or one or more paper additives.

Claim 24 (New): A method of treating mineral materials, comprising contacting a composition, comprising the polymer of claim 11, with one or more mineral materials.